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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 815,999	03/23/2001	Stephen Christopher Kitson	30001064	2104

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EXAMINER

NGUYEN, HOAN C

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 12/03/2001

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/815,999

Applicant(s)

KITSON ET AL.

Examiner

HOAN C. NGUYEN

Art Unit

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1 ☒ Certified copies of the priority documents have been received.
- 2 ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
- 3 ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other

## DETAILED ACTION

### *Claim Rejections - 35 USC § 112*

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

1. Claims 1-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

According to claims 1, 2, 12, 13, 14 and 16, the phrase "a random or pseudorandom two dimensional array of features" is rather confusing because

(1) The term "features" is not well defined, should "features" be pixels or alignment domains or liquid crystal molecules? What type of "feature" needs to specify.

(2) The term "random or pseudorandom" is a relative term, which renders the claim indefinite. The term "random or pseudorandom" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree of random, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. Besides, "pseudorandom" is randomness generated by a definite, nonrandom computational process, which is not a practical or experimental process to manufacture a working device.

According to claim 12, should a term "microstructure" read micro-domain of liquid crystal molecules? If not, applicant should specify the "microstructure."

Claims 3-11, 15, 17 are also rejected due to depending on the indefinite claims. Because phrase "a random or pseudorandom two dimensional array of features" in claims

well defined, the following rejections are based on the prior-art of any type of "feature" and any degree of "random."

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

1. Claims 1, 2, 4-7, 9 and 12 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamada et al. (US6067141A).

Yamada discloses in Fig. 12 that a liquid crystal device comprises (a) a first cell wall 102 and a second cell wall 101 enclosing a layer liquid crystal material 107; (b) electrodes 103 for applying an electric field across at least some of the liquid crystal material; (c) an analyzer/polarizer 106 mounted on cell walls; (d) seal member 104 sealing the cell. As Fig. 12B shown, a surface alignment structure on inner surface of at least the first cell wall provides a desired alignment to the liquid crystal molecules, wherein the surface comprises one of a random two dimensional array of feature which are at least one of shaped and orientated to produce the desired alignment, wherein the geometry and spacing of features is such as to cause the liquid crystal material to adopt at least one of a locally planar alignment of the liquid crystal director in a single azimuthal direction as Fig. 12B shown or in a plurality of azimuthal directions as Fig. 10 shown. Fig. 12 also shows a device wherein the inner surface of second cell wall is treated to produce at least one of a locally planar alignment of the liquid crystal material

substantially at right angles to the alignment direction on the first cell wall, where by the cell functions in a TN mode (Fig. 12A). Fig. 3 shows a device wherein the geometry and spacing of features is such as to cause the liquid crystal material to adopt at least on of a locally homeotropic alignment (claim 5).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US6067141A) as applied to claim 2 in view of Hashimoto et al. (EP0768560A1).

Reference applied to claim 2 does not disclose that the inner surface of the second cell wall is treated to produce a locally homeotropic alignment of liquid crystal material, whereby the cell function in a hybrid nematic mode.

Hashimoto discloses in Fig. 15 that hybrid nematic mode has been used in LCD device for high response speed of liquid crystal layer.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal device as Yamada disclosed with the inner surface of the second cell wall treated to produce a locally homeotropic alignment of liquid crystal material, whereby the cell function in a hybrid nematic mode for high-speed response.

3. Claims 8-11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US6067141A) as applied to claim 1, and in view of Hirata et al. (US5872611A).

Reference applied to claim 1 does not disclose that the surface comprises (a) one of a random or pseudorandom two dimensional array of feature, wherein the features comprise posts which are tilted with respected the normal with respect to the normal the plane of first cell wall; (b) the features are at least one of different height, different shape, different tilted and different orientation region of device.

Hirata discloses in Figs. 7, 11, 13, 14 that the features comprise posts which are tilted with respected the normal with respect to the normal the plane of first cell wall; and the features are at least one of different height, different shape, different tilted and different orientation region of device for good view angle characteristic free from inversion phenomenon obtained when view from any direction (column 10, lines 44-46).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal device as Yamada disclosed with posts tilted with respected the normal with respect to the normal the plane of first cell wall to manipulating alignment of liquid crystal material; and with at least one of different height, different shape, different tilted and different orientation region of device for good view angle characteristic.

4. Claims 13, 14, 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US6067141A) as applied to claims 2 and 12, and in view of Enichen (US5552611) and Foshaar et al. (US6236445B1)

Reference applied to claims 2 and 12 does not disclose method of manufacturing a cell wall comprises (a) applying a plastic material to surface to the surface of a wall; (b) applying a photoresist material to a surface of wall, exposing the applied photoresist material to suitable light source through a mask which has random two dimension array pattern, removing unexposed photoresist, and hardening the exposed photoresist material to produce a random two dimensional array of alignment feature on the wall.

Foushaar discloses in Figs. 1-3 that a method of manufacturing of cell comprises (a) applying a plastic material (column 8, lines 65-68, here stated as sublayer) to surface to the surface of a wall; (b) applying a photoresist material to a surface of wall, exposing the applied photoresist material to suitable light source through a mask, removing unexposed photoresist, and hardening the exposed photoresist material (column 2, lines 27-33). However, Foushaar fails to disclose mask with random two-dimension array pattern.

Enichen discloses mask with pseudo-random two-dimension array pattern (column 4, lines 9-10 or 31-38) that can be used to produce random posts with different sizes and shapes.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal device as Yamada disclosed with a manufacturing method of cell wall, which comprises applying a plastic material to surface to the surface of a wall for less cost in material and manufacture; (b) applying a photoresist material to a surface of wall, exposing the applied photoresist material to suitable light source through a mask which has random two dimension array

pattern, removing unexposed photoresist, and hardening the exposed photoresist material for producing a random two dimensional array of alignment feature on the wall.

5. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yamada et al. (US6067141A) as applied to claim 2, and in view of Naohide et al (US5574593A)

Reference applied to claim 2 does not disclose that the inner surface of the second cell wall is treated to produce a locally alignment of liquid crystal material, whereby the cell function in a STN mode.

Naohide discloses in Fig. 1 that the inner surface of the second cell wall is treated to produce a locally alignment of liquid crystal material, whereby the cell function in a STN mode 7.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify a liquid crystal device as Mobuaki disclosed with that the inner surface of the second cell wall treated to produce a locally alignment of liquid crystal material, whereby the cell function in a STN mode for high brightness and contrast.

### ***Conclusion***

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure: Kuroiwa, Takato, Kawada, Imai, Nonaka and Motoki.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HOAN C. NGUYEN whose telephone number is



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(703)306-0472. The examiner can normally be reached on MONDAY-

THURSDAY:8:00AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, SIKES L WILLIAM can be reached on (703)308-4842. The fax phone numbers for the organization where this application or proceeding is assigned are (703)308-5841 for regular communications and (703)308-5841 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0530.

HOAN C. NGUYEN  
Examiner  
Art Unit 2871

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November 12, 2001.

*William L. Sikes*